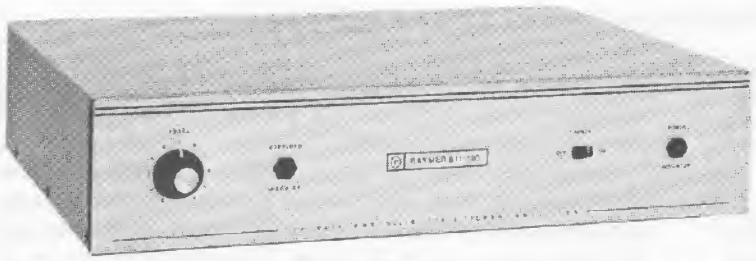
RAYMER

OPERATING INSTRUCTIONS



MODEL 811-100 AMPLIFIER

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS RECEIVER TO RAIN OR MOISTURE.

DESCRIPTION

The Raymer Model 811-100 is a monaural 100 watt RMS all silicon solid state amplifier. It is designed for dependable continuous operation in background music, public address, paging and sound reinforcement systems.

The input of the amplifier is high impedance unbalanced with a sensitivity of .4 volts. The input may be changed to a 500/600 ohm balanced line input with the use of a RAYMER plug-in transformer Model TT-4A.

The outputs provided on the Model 811-100 are 4 and 8 ohms unbalanced as well as 25 volts and 70 volts which may be connected for either balanced or unbalanced operation.

A trumpet protect switch is provided on the unit to prevent possible diaphragm damage on trumpet speakers caused by low frequency signals.

A unique feature of the amplifier is a red LED overload indicator, which when lit provides a visual warning that the amplifier is operating improperly. This may be caused by a mismatched load, overload or oscillation which overdrives the output transistors beyond safe operating limits and could cause component damage.

Model 811-100 has an AMPLIFIER PARALLEL jack for connecting two or more 811-100 or 810-100 amplifiers together so that they may be operated simultaneously to deliver a total output power in multiples of 100 watts into a speaker line.

UNPACKING

The unit is to be removed carefully from the carton and inspected for any possible damage in transit. If there is any evidence of any damage which might have occurred in shipment, immediately notify your supplier, or the transportation company which delivered it. Claims for damage sustained in transit must be made upon the carrier. Save all packing material for inspection by the claim agent who will furnish you with the proper forms and will also give you the necessary instructions for filing a claim.

In addition to the unit the carton should contain a warranty registration card. To insure proper servicing and to protect your rights under the warranty, be sure to fill in the warranty registration card and mail to the factory within 10 days.

INSTALLATION

Model 811-100 amplifier has ample vents for normal ventilation; however, it should be placed so as to permit free air flow around the unit. DO NOT PLACE ANY OBJECT ON TOP OF THE COVER OR IN ANY WAY BLOCK THE AIR FLOW OF THE VENTS. DO NOT STORE OR OPERATE THE AMPLIFIER in areas where the ambient temperature exceeds 140 degrees F.

The amplifier may be mounted in a 3½" vertical panel space in a rack, using a Raymer RPK-5 rack mounting kit. Should multiple units be stacked, or heat generating units be installed immediately above or below the amplifier(s), then at least a 2" spacing must be provided between these units for adequate ventilation.

The amplifier has an AC line cord with a 3 prong plug. The line cord should be plugged into a 3 wire grounded 105 to 120 volt 60Hz AC outlet. This will also ground the amplifier.

The power switch will turn on the amplifier as well as any auxiliary equipment connected to the AC receptacle on the rear panel, and the green LED indicator lamp on the front panel will light.

The AC receptacle on the rear panel is a 3 wire grounded outlet which can supply power to accessory or auxiliary equipment. Any auxiliary equipment connected to this AC receptacle is controlled by the POWER on-off switch so that turning off the power on the unit turns off all equipment.

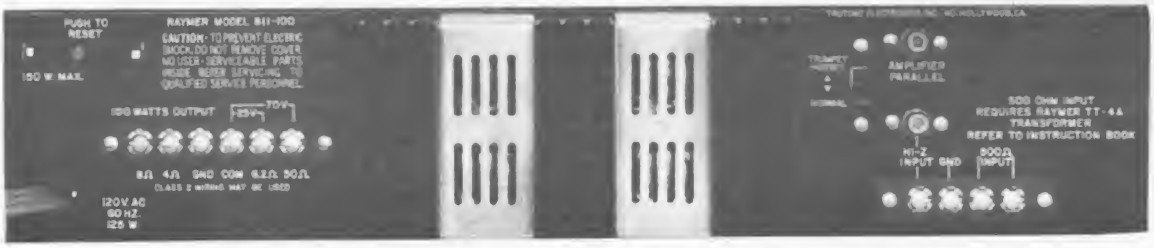


Figure 1. Rear Panel of Amplifier

CONNECTIONS

All connections are made on the rear panel as shown in figure 1.

INPUT CONNECTIONS

The Hi-Z INPUT connection may be made by use of a standard phono connector or by direct connection to the screw terminals marked Hi-Z INPUT and GND. Any patch cord or input lead to this circuit must be shielded cable. Inadequate shielding of this input from the output leads may result in a very high frequency oscillation which will light the overload indicator and may cause the circuit breaker to "trip."

The input of the amplifier may be changed to a 500/600 ohm balanced line input by inserting a RAYMER Model TT-4A telephone input transformer in the socket located inside of the amplifier. Balanced line input connections are made to the two screw terminals marked 500Ω input.

CAUTION

THE REMOVAL OF THE COVER FOR THE INSERTION OR REMOVAL OF THE TRANSFORMER MUST BE DONE BY A QUALIFIED TECHNICIAN. BE SURE THE POWER CORD IS DISCONNECTED BEFORE REMOVING THE COVER.

When the TT-4A transformer is installed in the unit the Hi-Z input is no longer operable because of the loading effect of the transformer secondary. To change this back to Hi-Z input the transformer must be removed.

OUTPUT CONNECTIONS

The speaker(s) or line matching transformers are connected to the screw terminal board located on the rear panel. For short distances any ordinary insulated wire, such as parallel lamp cord, may be used.

The 4 OHM or 8 OHM output is used when connecting directly to the speaker voice coils. When a speaker with an impedance of 8 ohms is connected to the amplifier, use the terminals on the amplifier marked GND and 8. For a 4 ohm speaker or two 8 ohm speakers in parallel, use GND and 4.

The 25 VOLT or 70 VOLT output is used when connecting to speakers which have line matching transformers. Connecting to the 25 volt or 70 volt tap on the unit permits the use of a number of speakers each with its own corresponding line matching transformer, thereby eliminating the necessity of calculating impedances. The tap on the line matching transformer is selected to give the power desired for each speaker. The total of all the power settings should be no greater than the amplifier output rating. If the speaker uses a 25 or 70 volt line transformer, connect the speaker transformer to the terminals marked COM and 25V (or 70V) according to the line desired. For an unbalanced line connect a jumper between COM and GND; if a balanced output line is used, no jumper is required.

Long lines have an appreciable resistance with resultant power loss. The use of parallel matching transformers on either 25 volt or 70 volt lines is recommended for long distances. In all cases, it is advisable to run as heavy a wire as possible consistent with the requirements. To avoid inducing hum in the system, do not parallel speaker cables with any AC line power cables.

70 volt distribution systems often require the speaker lines to be run in conduit. To determine whether they should be run in conduit check with local city codes for 70 volt system requirements.

Optimum performance of any transistor amplifier depends on the proper current delivered at the output terminals. Connecting a total load impedance at any tap less than the impedance indicated on the back panel of the amplifier will cause the transistors to deliver more current than they were designed for and will deteriorate the performance of the unit and cause damage to the transistors. To prevent this from occuring and to protect the components, the unit is equipped with a circuit breaker that will trip if the output impedance is below the specified rated value; for example, if two 8 ohm speakers are connected in parallel (resulting in a 4 ohm impedance), and in turn connected to the 8 ohm output terminal, the circuit breaker will trip as soon as the volume control is turned up to the unit's maximum output.

The circuit breaker located on the rear panel protects the unit from drawing excessive AC line current which could cause damage to the internal components. If the circuit breaker opens, the green LED indicator will go out and the amplifier will have no AC applied to it, but there will continue to be power at the auxiliary power receptacle located at the rear panel. Set the AC power switch to OFF and momentarily depress the red button on the circuit breaker to reset it, and slide the AC power switch to ON. Observe the red "Overload" indicator. If it lights, this indicates that the reason that the circuit breaker is tripping is due to a short circuit, or a mismatch of the output, or an oscillation caused by improper shielding or coupling of the input leads. If the overload light does not come on but the circuit breaker continues to trip, then this indicates a failure of an internal component.

IN THE EVENT THAT THE CIRCUIT BREAKER CONTINUES TO TRIP, DO NOT ATTEMPT TO DEFEAT THE FUNCTION OF THE CIRCUIT BREAKER. HAVE THE TROUBLE INVESTIGATED BY A QUALIFIED SERVICE TECHNICIAN OR RETURN THE UNIT TO THE FACTORY.

AMPLIFIER PARALLEL

Two or more RAYMER 811-100 or 810-100 amplifiers may be connected in parallel to deliver a total output in multiples of 100 watts to one speaker line. To operate these amplifiers into a single speaker line requires that the outputs of the amplifiers be connected either in series or in parallel. In order to be sure that each of these units is driving this line equally, the inputs of each amplifier power stage must also be connected in parallel. This circuit is identified on the RAYMER 811-100 as AMPLIFIER PARALLEL and on the RAYMER 810-100 as AMPLIFIER INPUT. Typical interconnection is shown in Figure 2.

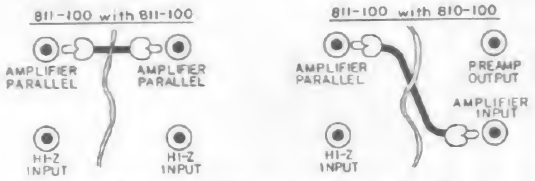


FIGURE 2; TYPICAL CONNECTIONS FOR PARALLELING AMPLIFIERS.

The output terminals of the 811-100 have been phased at the factory such that each terminal is in phase with the corresponding terminal of any other Raymer 811-100 or 810-100 amplifier. To connect these amplifiers either in parallel or in series the terminals should be wired as shown in Figure 3.

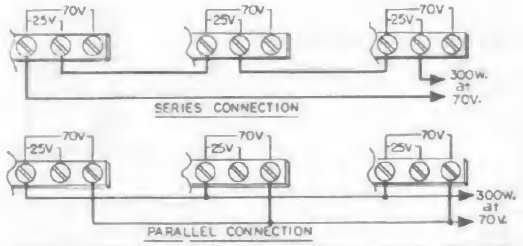


FIGURE 3; OUTPUT CONNECTIONS FOR SERIES OR PARALLEL OPERATION.

CAUTION: BEFORE OPERATING AMPLIFIERS CONNECTED EITHER IN SERIES OR PARALLEL, MAKE CERTAIN THAT THE TRUMPET PROTECT SWITCHES ARE IN THE SAME POSITION ON ALL AMPLIFIERS. WHEN CONNECTING THE OUTPUTS IN SERIES, MAKE CERTAIN THAT THERE IS NO JUMPER CONNECTION BETWEEN COM AND GND ON THE SCREW TERMINAL BOARD.

TRUMPET PROTECT

In installations where the amplifier is used to operate trumpet type speakers, the switch on the rear panel should be placed in the TRUMPET PROTECT position. This reduces the bass frequencies and protects the driver diaphragms from possible damage. When used with cone type loudspeakers the switch should be placed in the NORMAL position.

OVER LOAD INDICATOR

The red LED "Overload" indicator on the front panel monitors the output transistors and when it is illuminated continuously it is a warning that the amplifier is being operated improperly. This condition could be caused by mismatch of output load, incorrect output impedance, short circuit in the output, or that the amplifier is oscillating (which could be caused by improper shielding or position of input leads) and may result in the circuit breaker tripping.

To localize the problem, reduce the LEVEL control to "0." If the LED light goes out, then the trouble is more than likely in the external equipment connected to the amplifier. If the light does not go out, have the amplifier serviced by a qualified service technician or return the unit to the factory.

Occasional flickering of the LED means that the amplifier is being driven to the maximum on peaks of the program material, which is not harmful nor will in any way damage the amplifier.

WARRANTY

THIS UNIT HAS BEEN VERY CAREFULLY INSPECTED AND IS WARRANTED TO BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE FOR A PERIOD OF ONE YEAR FROM DATE OF SALE TO THE ORIGINAL PURCHASER. THIS WARRANTY DOES NOT EXTEND TO ANY UNIT WHICH BEEN SUBJECT TO ABUSE, MISUSE, NEGLECT, ACCIDENT, IMPROPER INSTALLATION, OR ALTERATIONS THE OBLIGATION OF CETEC RAYMER UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OF ANY DEFECT IN MATERIAL OR WORKMANSHIP AND/OR THE REPLACEMENT OF ANY DEFECTIVE PART, PROVIDED THE UNIT IS RETURNED TO CETEC RAYMER TRANSPORTATION PREPAID.

IT IS RECOMMENDED THAT ANY UNIT ON WHICH SERVICE IS REQUIRED BE PROCESSED THROUGH YOU DISTRIBUTOR OR INSTALLATION COMPANY WHEREVER POSSIBLE.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AND OF ALL OTHER OBLIGATIONS OR LIABILITIES ON OUR PART. WE NEITHER ASSUME NOR AUTHORIZE ANY OTHER PERSON TO ASSUME FOR US ANY OTHER LIABILITY IN CONNECTION WITH THE PRODUCTS MANUFACTURED BY CETEC RAYMER.

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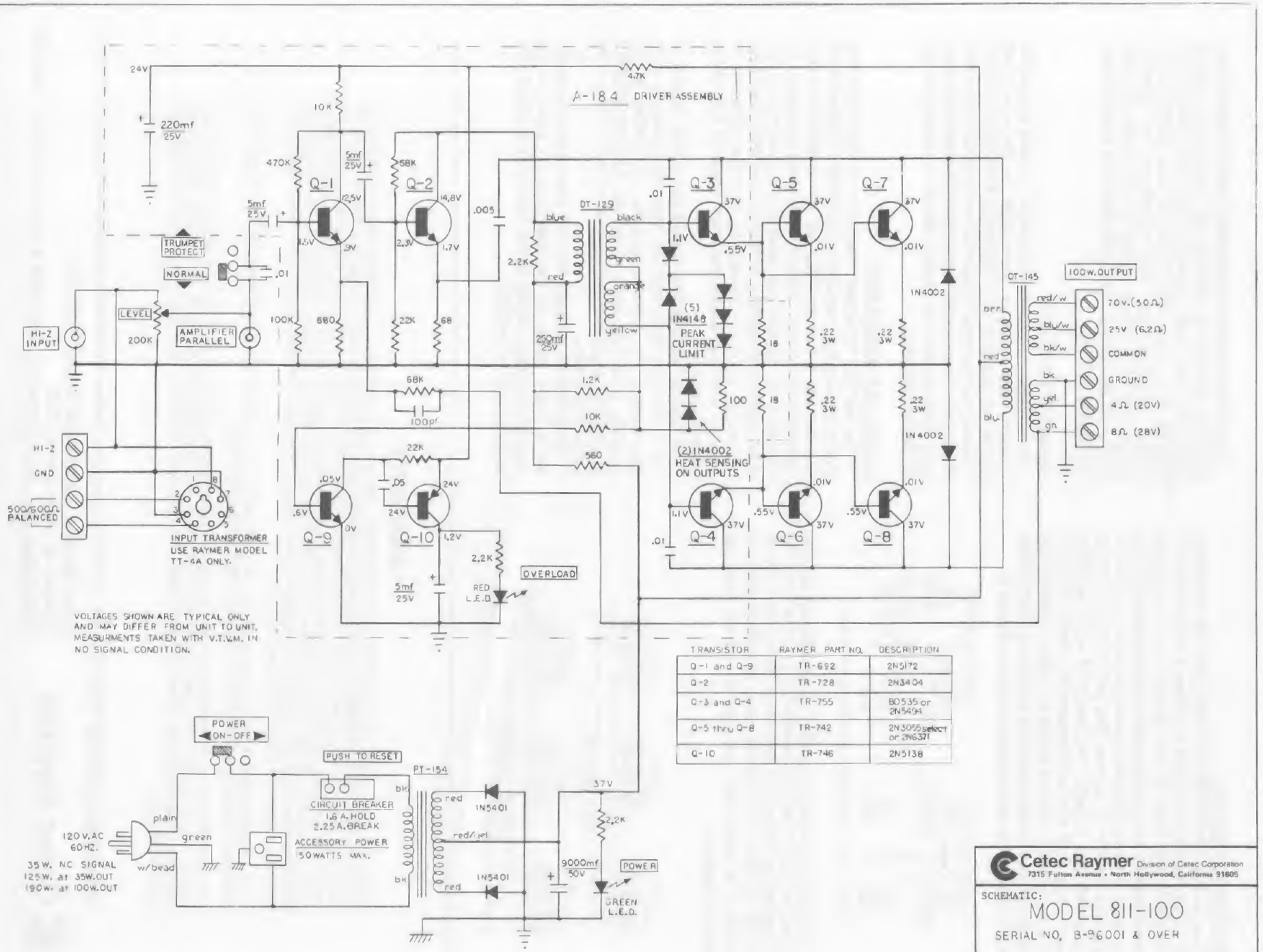

TRANSISTOR	RAYMER PART NO.	DESCRIPTION
Q-1 and Q-9	TR-692	2N5172
Q-2	TR-728	2N3404
Q-3 and Q-4	TR-755	BD535 or 2N5494
Q-5 thru Q-8	TR-742	2N3055 select or 2N6371
Q-10	TR-746	2N5138

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SCHEMATIC:
MODEL 811-100
SERIAL NO. B-96001 & OVER

ENGINEER: C KOGGE | DATE REV. 3/7/84